REMARKS

Claims 1-32 are pending in this application. By this Amendment, claims 1 and 18 have been amended. No new matter has been added.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Nguyen in the July 21 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance for the reasons discussed herein; (b) do not raise any new issue requiring further search and/or consideration as the amendments amplify issues previously discussed throughout prosecution; and (c) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

In paragraph 5, on page 7 of the Office Action, claims 5-10, 23, 24, and 26 were objected to as being dependent upon a rejected base claim but indicated as allowable if rewritten in independent form including all the features of the base claim and any intervening claims. Although Applicants appreciate this indication of the allowability of these claims, Applicants submit that claim 1, the claim from which claims 2-17 depend, and that claim 18, the claim from which claims 19-32 depend, are allowable as agreed at the interview.

In paragraph 3, on page 2 of the Office Action, claims 1-3, 11-21, 25, and 27-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Molinier, U.S. Patent No. 6,758,036, in view of Takahashi et al. (Takahashi), U.S. Patent No. 6,679,050. The rejection is respectfully traversed.

Applicants' invention of claim 1 calls for a device for purifying exhaust gas for an engine having an exhaust passage, the engine being operated with a lean air-fuel ratio, the device comprising a SO_X storage arranged in the exhaust passage for temporarily storing SO_X

contained in an exhaust gas inflowing therein; an auxiliary catalyst arranged in the exhaust passage downstream of the SO_X storage, the auxiliary catalyst having an oxidizing ability; SO_X discharging means for discharging SO_X stored in the SO_X storage therefrom; and atmosphere control means for controlling an atmosphere of the auxiliary catalyst, wherein the auxiliary catalyst converts the SO_X discharged from the SO_X storage to sulfate and increases an amount of sulfate being discharged into the outside air when an atmosphere of the auxiliary catalyst is in a sulfate forming atmosphere in which an amount of a reducing agent contained in the exhaust gas flowing to the auxiliary catalyst is smaller than an allowable minimum amount and a temperature of the auxiliary catalyst is higher than an allowable maximum temperature, and when the atmosphere of the auxiliary catalyst is changed to an atmosphere other than the sulfate forming atmosphere, the non-sulfate forming atmosphere of the auxiliary catalyst reduces the amount of sulfate being discharged into the outside air. As agreed at the interview, neither Molinier nor Takahashi disclose these features.

Applicants' invention of claim 18 calls for a device for purifying exhaust gas for an engine having an exhaust passage, the engine being operated with a lean air-fuel ratio, the device comprising a SO_X storage arranged in the exhaust passage for temporarily storing SO_X contained in an exhaust gas inflowing therein; an auxiliary catalyst arranged in the exhaust passage downstream of the SO_X storage, the auxiliary catalyst having an oxidizing ability; and SO_X discharging means for discharging SO_X stored in the SO_X storage therefrom, wherein discharge of SO_X stored in the SO_X storage therefrom is prevented or suppressed while the auxiliary catalyst is in, or is turned to, a sulfate forming atmosphere in which the SO_X is converted to sulfate and is discharged to the outside air and in which an amount of a reducing agent contained in the exhaust gas flowing to the auxiliary catalyst is smaller than an allowable minimum amount and a temperature of the auxiliary catalyst is higher than an allowable maximum temperature, whereby the formation and discharge of sulfate from the

auxiliary catalyst is reduced. As agreed at the interview, neither Molinier nor Takahashi disclose these features.

At the interview, Applicants' representative discussed the differences between the features of amended claims 1 and 18 and the disclosure of Molinier. In particular, the NO_x absorber (5) of Molinier does not correspond to Applicants' auxiliary catalyst because Molinier's NO_x absorber (5) does not covert SO_x, i.e., H_2S or SO_2, to sulfate SO_3, as recited in claims 1 and 18. Molinier is trying to prevent sulfur poisoning of the NO_x absorber (5) by introducing fuel to the NO_x absorber (5) prior to a sulfur trap and/or particulate trap regeneration stream entering the NO_x absorber (col. 5, lines 49-60). Accordingly, Molinier only describes a method for regenerating a sulfur trap in an exhaust system having a sulfur trap disposed upstream of the NO_x absorber (5) in order to prevent or suppress the sulfur, i.e., H_2S or SO_2, from being trapped in the NO_x absorber (5) (Abstract; Fig. 5). The NO_x absorber (5) absorbs SO_2 therein in a lean environment, and discharges H_2S or SO_2 therefrom, rather than SO_3, in a rich environment (col. 5, line 61-col. 6, line 6; Fig. 5). The result is no emissions of sulfate SO_3 into the outside air, i.e., the atmosphere and environment. The reason is because the NO_x absorber in Molinier has substantially no function to convert SO_2 and H_2S into SO_3 and discharge the SO_3 into the outside air. Any sulfate that is trapped in the NO_x absorber in Molinier would not be discharged to the outside air as long as it remains trapped. Accordingly, Molinier fails to disclose or suggest that the NO_x absorber (5) converts the SO_x, i.e., H_2S or SO_2, flowing through the NO_x absorber (5) to <u>sulfate SO_3</u> and discharges the <u>sulfate SO_3</u> from the auxiliary catalyst into the <u>outside air</u>.

As discussed at the interview, the Applicants' device, on the other hand, is directed to controlling the sulfate forming atmosphere in which <u>sulfate SO_3</u> is formed and discharged into the <u>outside air</u>. As described by the Applicants, when the auxiliary catalyst is in an atmosphere in which the amount of the reducing agent is smaller than the allowable lower

limit amount and the temperature of the auxiliary catalyst is higher than the allowable upper limit temperature, a large amount of sulfate may be discharged from the auxiliary catalyst (page 23, lines 7-14). Accordingly, the SO_X, which is discharged from the NO_x absorber flows into the auxiliary catalyst, is converted to sulfate SO_3 and is discharged into the outside air (page 23, lines 20-26).

In other words, a large amount of SO_3 is discharged from the auxiliary catalyst into the outside air when SO_X flows into the auxiliary catalyst, which is in the sulfate forming atmosphere. The sulfate forming atmosphere is an atmosphere in which the amount of sulfate SO_3 discharging from the auxiliary catalyst is increased. The amount of sulfate SO_3 being discharged from the auxiliary catalyst is controlled by changing the atmosphere from a sulfate forming atmosphere to a non-sulfate forming atmosphere. In this way, the amount of sulfate SO_3 can be increased or decreased. Molinier's invention does not perform this function.

Likewise, Takahashi is completely silent regarding converting the H_2S or SO_2 flowing through a catalyst to sulfate SO_3 and discharges the sulfate SO_3 from the auxiliary catalyst into the outside air. As the Office Action admits on page 4, "Molinier fails to disclose that in a sulfate forming atmosphere, a temperature of the auxiliary catalyst is higher than allowable maximum temperature." The Office Action further admits on page 9 that "there is no modification whatsoever of the device and the method of operating the device in Molinier by the combination of two references." The Office Action on page 8 states, "the reference of Takahashi et al. is only utilized to show an obvious fact that a sulfate forming atmosphere for a catalyst adsorber (9) is well defined and understood. As indicated on lines 17-36 of column 5, the catalyst adsorber (9) only adsorbs SO_x during a lean air-fuel ratio environment and adsorbs more SO_x when a temperature of the catalyst is higher than a predetermined temperature."

But Takahashi also states the SO_x trapping rate becomes smaller if the temperature rises above the predetermined temperature (col. 5, lines 29-31). As discussed at the interview, in a lean atmosphere, the NO_x absorber (5) in Molinier and the rear three-way catalyst (9) in Takahashi, which more correspond to Applicants' auxiliary catalyst, trap SO_x therein, resulting in sulfate SO_3 not being discharged from the absorber (5) and/or catalyst (9). The fact that something is a mere possibility or can be modified does not satisfy the requirements of 35 U.S.C. §103. As MPEP §2143.01 states, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." *In re Mills*, 916 F.2d 680, (Fed. Cir. 1990). This is especially true given Takahashi and Molinier fail to describe or suggest a device for converting SO_x (H_2S, SO_2) to sulfate SO_3 and discharging the sulfate SO_3 from the auxiliary catalyst into the air. Thus, Takahashi lacks the required suggestion under 35 U.S.C. §103 to modify Molinier to achieve the desired features recited in claims 1 and 18.

Because neither of the applied references, nor the combination thereof, teach, disclose or suggest all the features recited in claim 1, the references cannot teach or suggest claims 2, 3, and 11-17 for that reason and for the additional features recited. Similarly, as neither of the applied references, nor the combination thereof, teach, disclose or suggest all the features recited in claim 18, the references cannot teach or suggest claims 19-21, 25 and 27-32 for that reason and for the additional features recited. Thus, as agreed at the interview, claims 2, 3, 11-17, 19-21, 25, and 27-32 are distinguishable over the applied references.

In paragraph 4, on page 6 of the Office Action, claims 4 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Molinier in view of Takahashi, and in view of Hirota et al. (Hirota), U.S. Patent No. 5,974,791. The rejection is respectfully traversed.

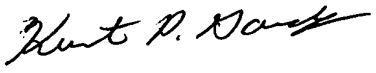
As agreed at the interview, Takahashi and Hirota fail to overcome the deficiencies of Molinier as applied to claim 1 and, similarly, as applied to claim 18.

Because the combination of applied references does not teach, disclose or suggest all of the features recited in claim 1, it cannot suggest claim 4 for that reason and for the additional features recited. Similarly, as the combination of applied references does not teach, disclose or suggest all of the features recited in claim 18, it cannot suggest claim 22 for that reason and for additional features recited. Thus, as agreed at the interview, claims 4 and 22 are distinguishable over the applied references.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-32 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Kurt P. Goudy
Registration No. 52,954

JAO:KPG/tea

Date: August 4, 2005

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry;
Charge any fee due to our Deposit Account No. 15-0461